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United States Patent [19]

Chaddha

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[45] Date of Patent: Jan. 11, 2000

[54] **SELECTING A COST-EFFECTIVE BANDWIDTH FOR TRANSMITTING INFORMATION TO AN END USER IN A COMPUTER NETWORK**

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[73] Assignee: **Microsoft Corporation**, Redmond, Wash.

[21] Appl. No.: **08/887,754**

[22] Filed: **Jul. 3, 1997**

[51] **Int. Cl.**[7] **G06F 13/00**

[52] **U.S. Cl.** **709/226**; 709/223; 709/238

[58] **Field of Search** 709/201, 202, 709/218, 217, 219, 223, 226, 238, 239, 240, 241, 224; 370/431, 468

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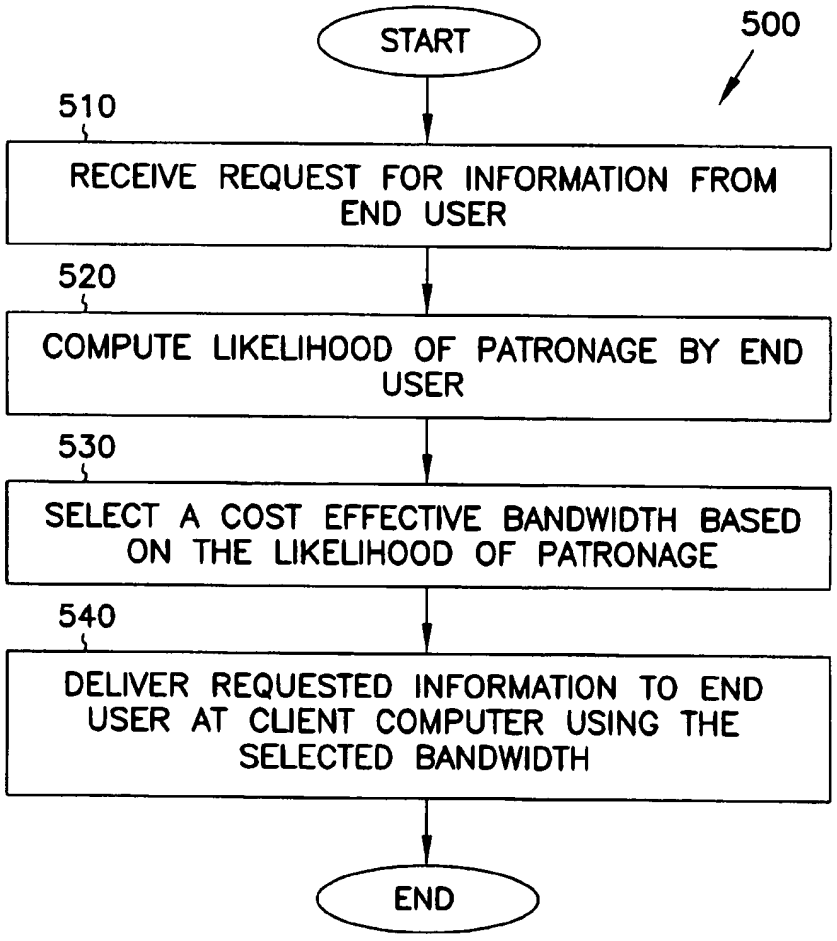
[57] **ABSTRACT**

A cost effective method for generating and delivering scalable multimedia content targeted at specific end user(s) via client computers coupled to servers by a diverse computer network which includes local area networks (LANs) and/or wide area networks (WANs) such as the internet. In one embodiment in which the server is billed for network bandwidth consumed, upon receiving an end user request for multimedia content, the server computes the likelihood of patronage. Indicators useful for estimating the likelihood of patronage include regularity of patronage, income history, credit worthiness, age, hobbies, occupation and marital status. A cost effective bandwidth is selected for delivering the requested content. Such an arrangement is advantageous because the content is delivered to end user at a bandwidth corresponding to the probability of consummating a sale.

20 Claims, 5 Drawing Sheets



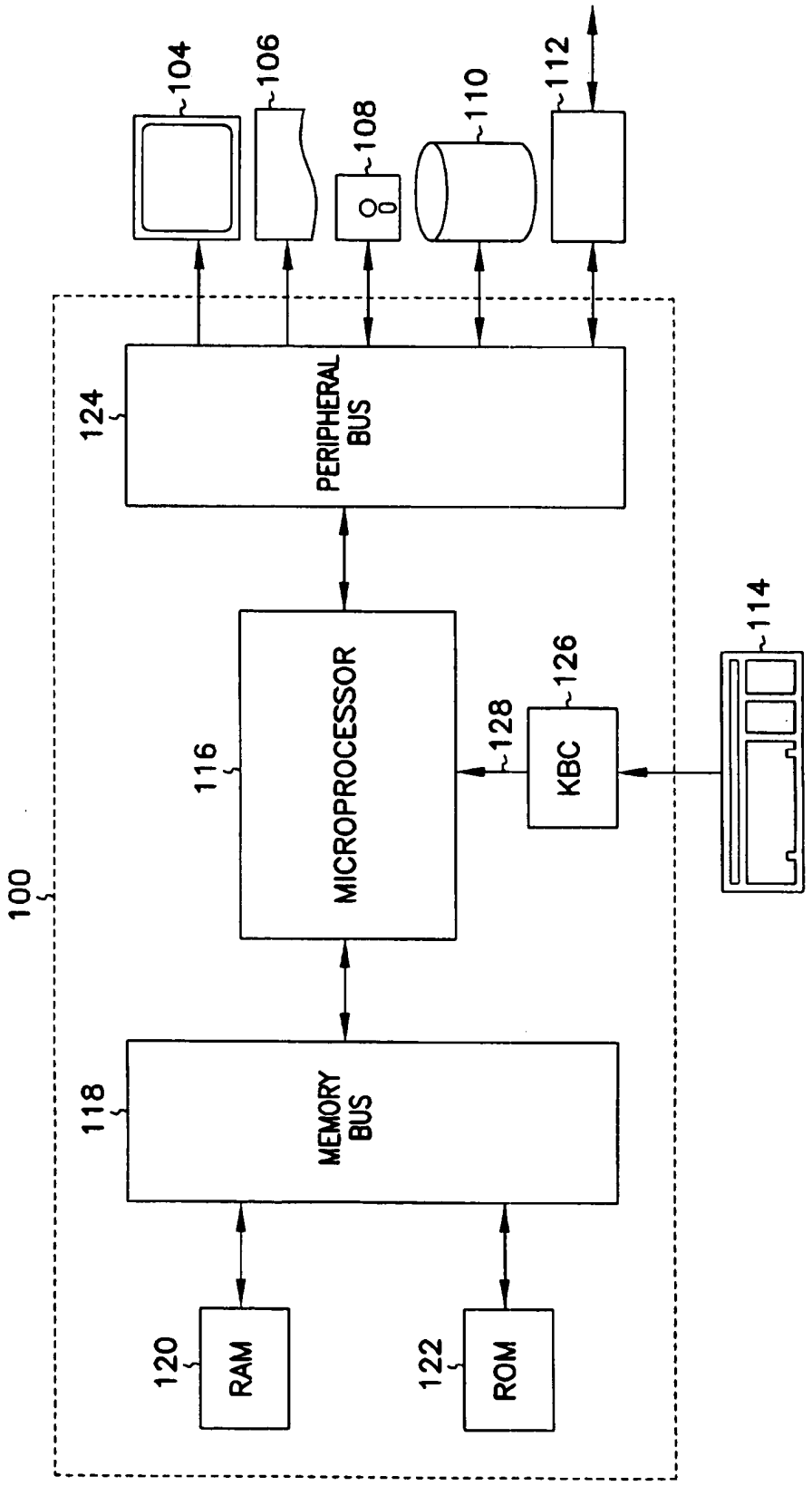

104
106
108
110
112
PERIPHERAL BUS
124
MICROPROCESSOR
116
KBC
126
128
114
100
MEMORY BUS
118
RAM
120
ROM
122

FIG. 1

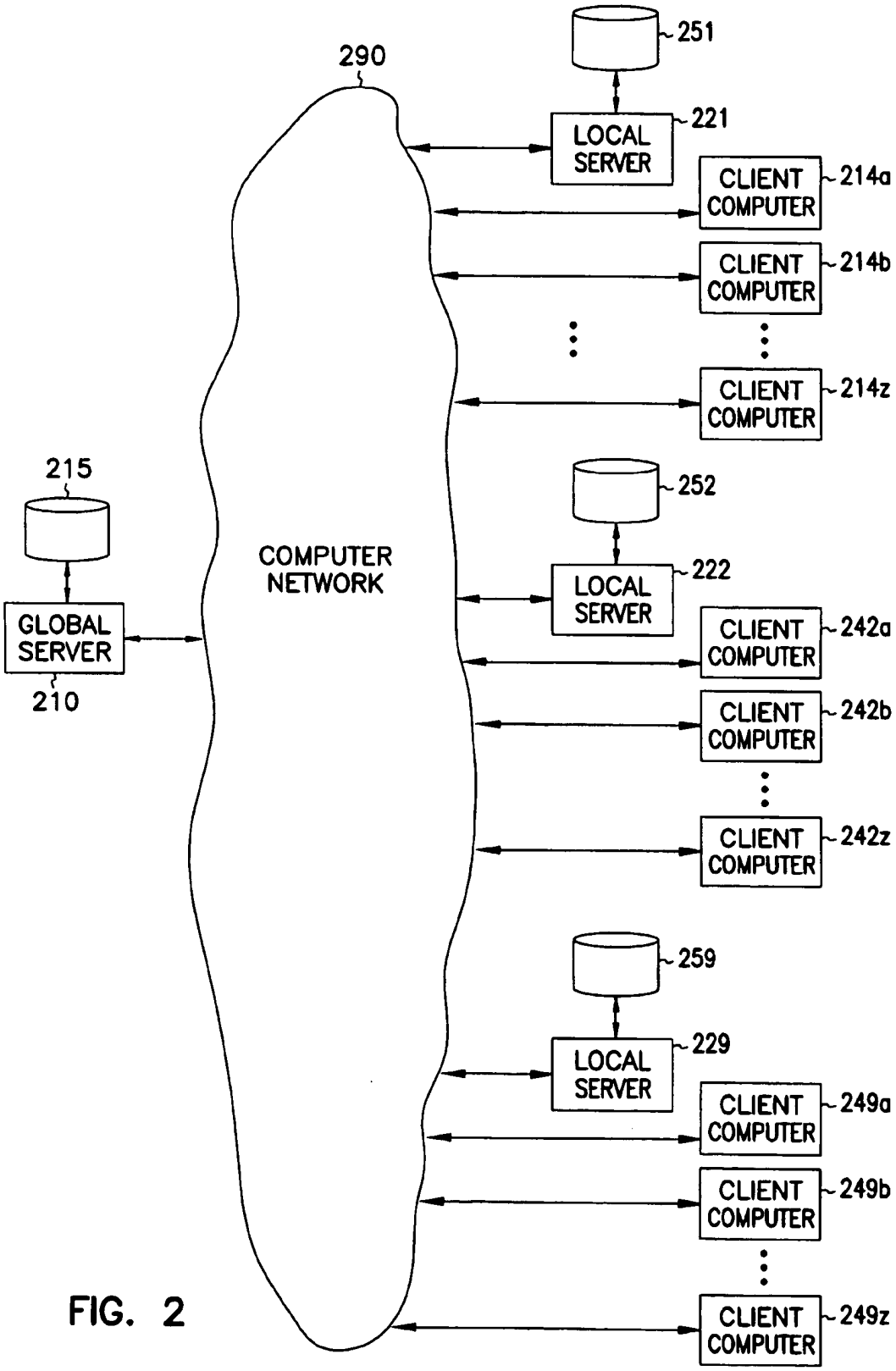

290
251
LOCAL SERVER
221
CLIENT COMPUTER
214a
CLIENT COMPUTER
214b
CLIENT COMPUTER
214z
215
252
COMPUTER NETWORK
LOCAL SERVER
222
GLOBAL SERVER
210
CLIENT COMPUTER
242a
CLIENT COMPUTER
242b
CLIENT COMPUTER
242z
259
LOCAL SERVER
229
CLIENT COMPUTER
249a
CLIENT COMPUTER
249b
CLIENT COMPUTER
249z

FIG. 2

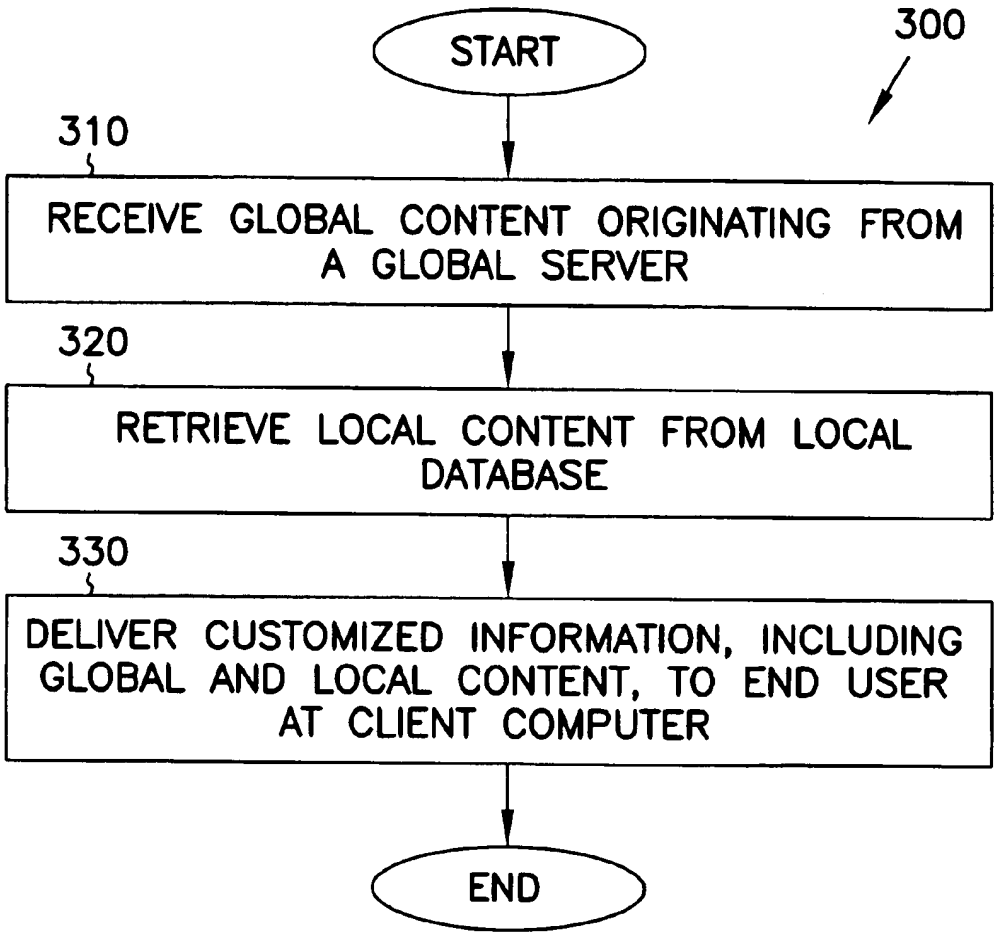

300
START
310
RECEIVE GLOBAL CONTENT ORIGINATING FROM A GLOBAL SERVER
320
RETRIEVE LOCAL CONTENT FROM LOCAL DATABASE
330
DELIVER CUSTOMIZED INFORMATION, INCLUDING GLOBAL AND LOCAL CONTENT, TO END USER AT CLIENT COMPUTER
END

FIG. 3

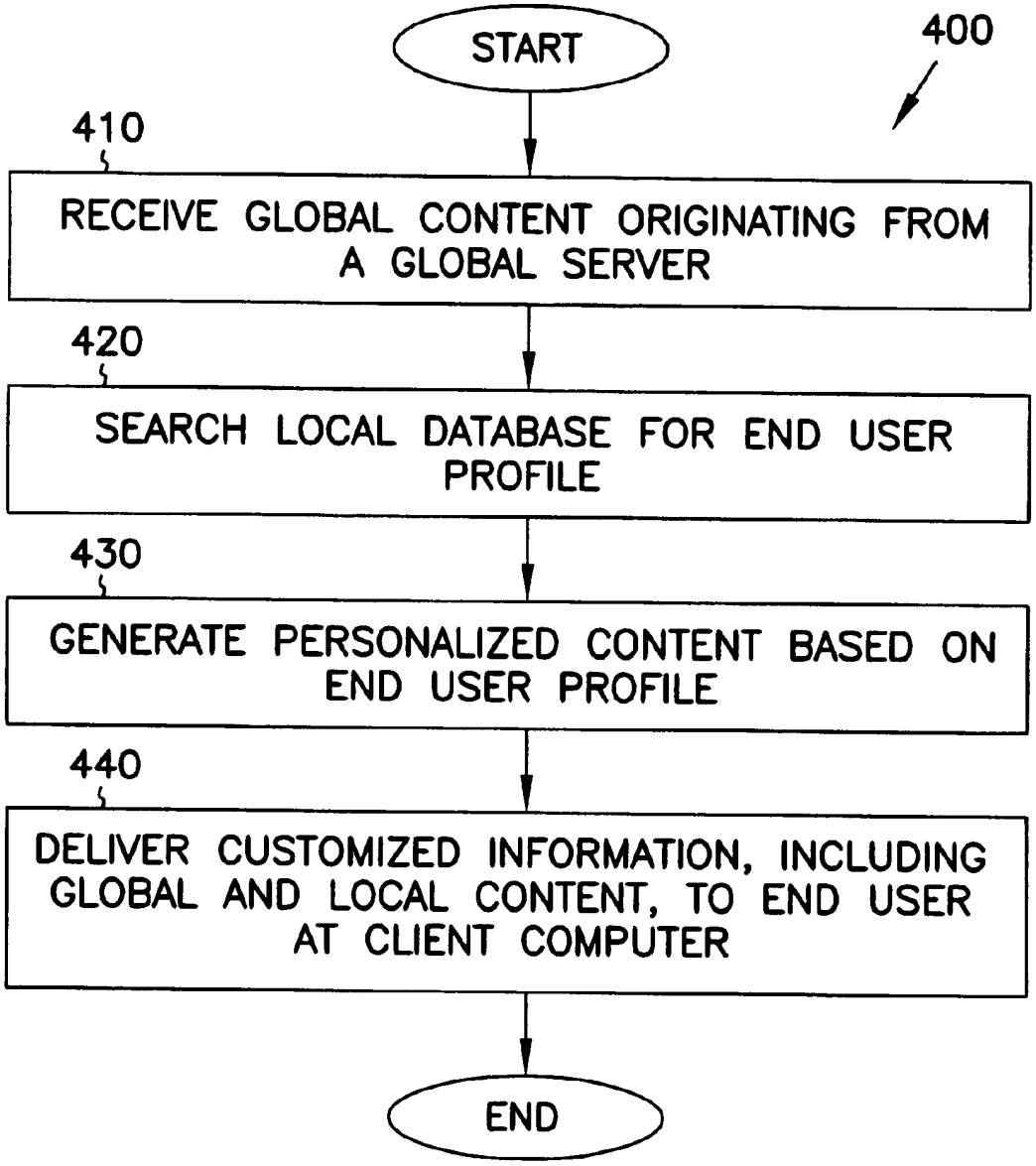

START
400
410
RECEIVE GLOBAL CONTENT ORIGINATING FROM A GLOBAL SERVER
420
SEARCH LOCAL DATABASE FOR END USER PROFILE
430
GENERATE PERSONALIZED CONTENT BASED ON END USER PROFILE
440
DELIVER CUSTOMIZED INFORMATION, INCLUDING GLOBAL AND LOCAL CONTENT, TO END USER AT CLIENT COMPUTER
END

FIG. 4

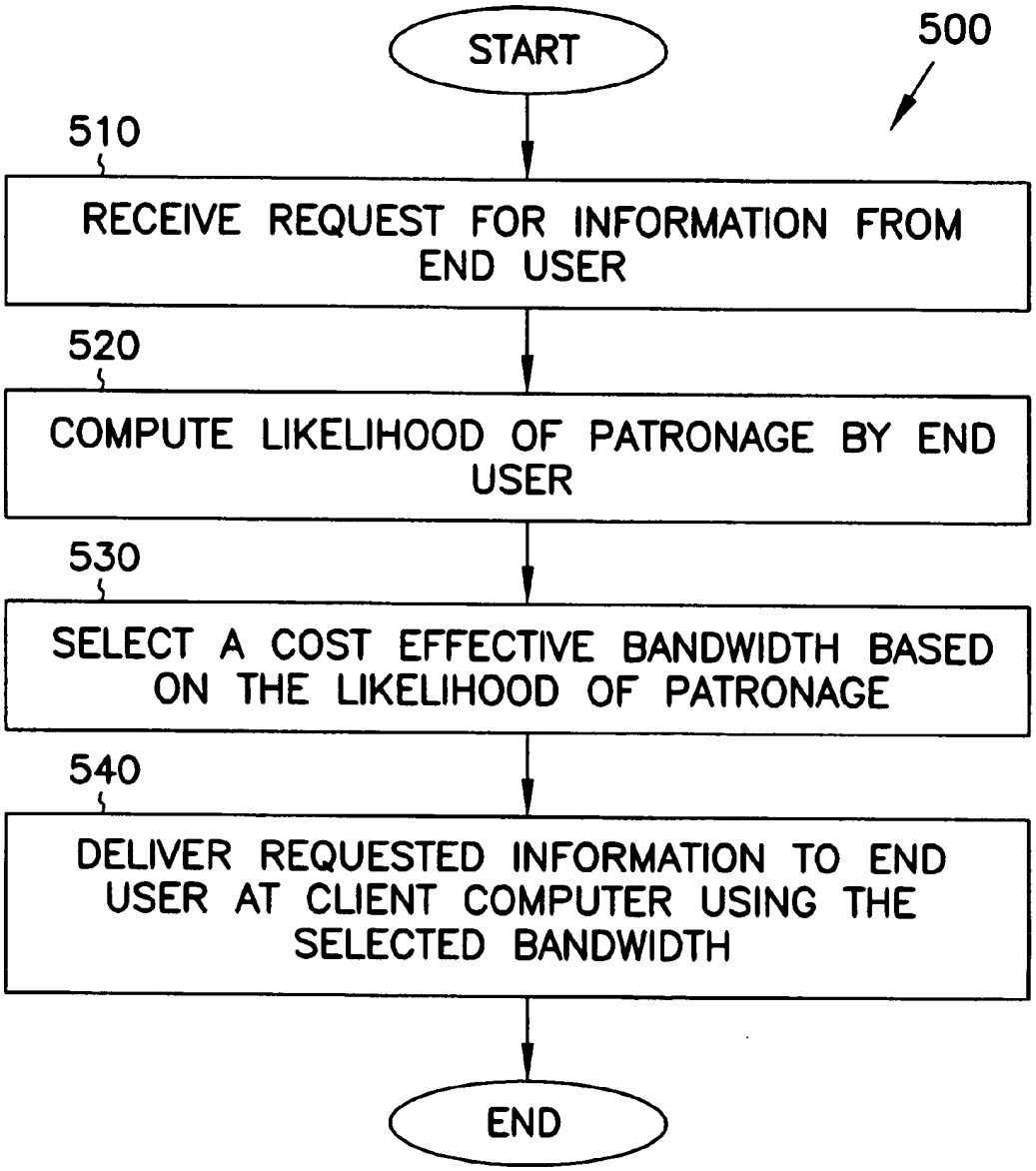

500
START
510
RECEIVE REQUEST FOR INFORMATION FROM END USER
520
COMPUTE LIKELIHOOD OF PATRONAGE BY END USER
530
SELECT A COST EFFECTIVE BANDWIDTH BASED ON THE LIKELIHOOD OF PATRONAGE
540
DELIVER REQUESTED INFORMATION TO END USER AT CLIENT COMPUTER USING THE SELECTED BANDWIDTH
END

FIG. 5

SELECTING A COST-EFFECTIVE BANDWIDTH FOR TRANSMITTING INFORMATION TO AN END USER IN A COMPUTER NETWORK

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the customization of information. More particularly, the present invention relates to the distribution of customized multimedia content over a network.

Related Applications

Pending U.S. patent application Ser. No. 08/818,804, entitled "Production of a Video Stream with synchronized Annotations over a Computer Network", is incorporated herein by reference in its entirety.

Description of the Related Art

With the proliferation of connections to the internet by a rapidly growing number of consumers, the viability of the internet as a widely accepted marketing channel using multimedia content has increased correspondingly. However, in a substantially dispersed marketplace, sending the same marketing content to all the consumers within the marketplace is not cost effective.

This is because consumers within the substantially dispersed marketplace may have diverse interests since their needs can vary greatly. Using a sporting goods example, a busy executive may only be interested in stationary exercise machines, while a retired engineer may be interested in rifles and camping equipment. Consumer needs also vary greatly depending on geographical location. Swimsuits are probably more popular in San Diego than in Anchorage. Conversely, snow mobiles are probably sell better in Alaska than in Arizona.

As such, efficient distribution of marketing information is needed to avoid wasting network resources. However, traditional methods of marketing generally involve mass marketing information to the consumers within the marketplace. This mass marketing model is unsatisfactory for large marketplaces wherein the consumers are more likely to have diverse interest.

In view of the foregoing, there are desired improved techniques for efficiently distributing marketing information over a computer network to consumers with diverse interest, while efficiently utilizing the network resources thereby providing consumers with information that is of interest to the individual consumer in a cost effective manner.

SUMMARY OF THE INVENTION

The present invention provides cost effective scalable multimedia content targeted at specific end user(s) via client computers coupled to servers by a diverse computer network which includes local area networks (LANs) and/or wide area networks (WANs) such as the internet. Multimedia content includes video/audio streams and textual and/or graphical information such as applets and HTML pages.

In one embodiment in which the server is billed for network bandwidth consumed, upon receiving an end user request for multimedia content, the server computes the likelihood of patronage. Indicators usefull for estimating the likelihood of patronage include regularity of patronage, income history, credit worthiness, age, hobbies, occupation and marital status. A cost effective bandwidth is selected for delivering the requested content. Such an arrangement is advantageous because the content is delivered to end user at a bandwidth corresponding to the probability of consummating a sale. These and other advantages of the present invention will become apparent upon reading the following detailed descriptions and studying the various figures of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of an exemplary computer system for practicing the various aspects of the present invention.

FIG. **2** is a block diagram showing an exemplary hardware environment for practicing the customizable information distribution (CID) system of the present invention.

FIG. **3** is a flowchart illustrating the generation and delivery of localized content for end user(s) in accordance with the present invention.

FIG. **4** is a flowchart illustrating the generation and delivery of personalized content for end user(s) in accordance with another aspect of the invention.

FIG. **5** is a flowchart illustrating the selection of cost effective bandwidth for delivering scalable multimedia content to end user(s) in accordance with yet another aspect of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will now be described in detail with reference to a few preferred embodiments thereof as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order to not unnecessarily obscure the present invention.

FIG. **1** is a block diagram of an exemplary computer system **100** for practicing the various aspects of the present invention. Computer system **100** includes a display screen (or monitor) **104**, a printer **106**, a floppy disk drive **108**, a hard disk drive **110**, a network interface **112**, and a keyboard **114**. Computer system **100** includes a microprocessor **116**, a memory bus **118**, random access memory (RAM) **120**, read only memory (ROM) **122**, a peripheral bus **124**, and a keyboard controller **126**. Computer system **100** can be a personal computer (such as an Apple computer, e.g., an Apple Macintosh, an IBM personal computer, or one of the compatibles thereof), a workstation computer (such as a Sun Microsystems or Hewlett-Packard workstation), or some other type of computer.

Microprocessor **116** is a general purpose digital processor which controls the operation of computer system **100**. Microprocessor **116** can be a single-chip processor or can be implemented with multiple components. Using instructions retrieved from memory, microprocessor **116** controls the reception and manipulation of input data and the output and display of data on output devices.

Memory bus **118** is used by microprocessor **116** to access RAM **120** and ROM **122**. RAM **120** is used by microprocessor **116** as a general storage area and as scratch-pad memory, and can also be used to store input data and processed data. ROM **122** can be used to store instructions or program code followed by microprocessor **116** as well as other data.

Peripheral bus **124** is used to access the input, output, and storage devices used by computer system **100**. In the described embodiment(s), these devices include display screen **104**, printer device **106**, floppy disk drive **108**, hard disk drive **110**, and network interface **112**. Keyboard controller **126** is used to receive input from keyboard **114** and send decoded symbols for each pressed key to microprocessor **116** over bus **128**.

Display screen **104** is an output device that displays images of data provided by microprocessor **116** via peripheral bus **124** or provided by other components in computer system **100**. Printer device **106** when operating as a printer provides an image on a sheet of paper or a similar surface. Other output devices such as a plotter, typesetter, etc. can be used in place of, or in addition to, printer device **106**.

Floppy disk drive **108** and hard disk drive **110** can be used to store various types of data. Floppy disk drive **108** facilitates transporting such data to other computer systems, and hard disk drive **110** permits fast access to large amounts of stored data.

Microprocessor **116** together with an operating system operate to execute computer code and produce and use data. The computer code and data may reside on RAM **120**, ROM **122**, or hard disk drive **120**. The computer code and data could also reside on a removable program medium and loaded or installed onto computer system **100** when needed. Removable program mediums include, for example, CD-ROM, PC-CARD, floppy disk and magnetic tape.

Network interface circuit **112** is used to send and receive data over a network connected to other computer systems. An interface card or similar device and appropriate software implemented by microprocessor **116** can be used to connect computer system **100** to an existing network and transfer data according to standard protocols.

Keyboard **114** is used by a user to input commands and other instructions to computer system **100**. Other types of user input devices can also be used in conjunction with the present invention. For example, pointing devices such as a computer mouse, a track ball, a stylus, or a tablet can be used to manipulate a pointer on a screen of a general-purpose computer.

The present invention can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data which can be thereafter be read by a computer system. Examples of the computer readable medium include read-only memory, random-access memory, magnetic data storage devices such as diskettes, and optical data storage devices such as CD-ROMs. The computer readable medium can also be distributed over a network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

FIG. **2** is a block diagram showing an exemplary hardware environment for practicing the customizable information distribution (CID) system of the present invention. The CID system includes a global server **210**, a plurality of local servers **221**, **222**, . . . **229**, and a plurality of client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*, each of which can be implemented using the "general purpose" computer system **100** described above. Alternatively, client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z* may also be specialized microprocessor/microcontroller based systems, including television-based "set-top" boxes such as WebTV's boxes.

Global server **210** and local servers **221**, **222**,... **229** are coupled to client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*, via a computer network **290**, e.g., the internet. In addition, global server **210** is coupled to a global database **215**, while local servers **221**, **222**, . . . **229** are coupled to local databases **251**, **252**, . . . **259**, respectively. Note that the disclosed hardware environment is exemplary. For example, global database **215** may be coupled to global server **210** via network **290**. Similarly, local servers **221**, **222**, . . . **229** may be coupled, via network **290**, to local databases **251**, **252**, . . . **259**, respectively.

In this embodiment, global server **210** is a stream server and provides video stream(s) and optional global annotation stream(s) to one or more of client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*, ondemand. As described in the above cited U.S. patent application, Ser. No. 08/818,804, entitled "Production of a Video Stream with synchronized Annotations over a Computer Network", upon a request from a client computer, e.g., client computer **241***a*, encoded video/audio frames and any associated global annotation frames are streamed from global server **210** to client computer **241***a* for synchronous display. Streaming high content data such as video frames over network **290** is very efficient because streaming eliminates the need for a large buffer at client computer **241***a*. In addition, streaming also provides flexibility, e.g., switching video sources midstream is possible without wasting network resources since streaming is based on ajusting time (JIT) protocol and does not involve downloads of the entire video stream prior to display at client computer **241***a*. The encoded video/audio streams are then decoded by and displayed at client computer **241***a*.

In accordance with one aspect of the invention, as illustrated by the flowchart of FIG. **3**, global content such as global video frames is streamed from global server **210** (step **310**), while local content such as local annotations is retrieved from local server **221** (step **320**). Local annotations can include banners, ticker tape, subtitles and/or animated graphics. In this example, synchronization of the global video frames and the local annotations is accomplished by sending control packets from global server **210** to local server **221**. Such an arrangement permits customized information which includes both global content and customized local content to be delivered to groups of end users or for individual end users at client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z* (step **330**).

In one implementation, local annotation frames for retrieving local content are streamed from local server **221**. Annotation frames include event type and data type. In the case of a flipper frame, an event type, each flipper frame includes a HTML address and an event time marker. In the case of a ticker frame, a data type, each ticker frame includes ticker data and an event time marker. Note that an event time marker need not be identical to the time stamp of a corresponding video frame. Client computer **241***a* is capable of switching to a new displayable event together with a video frame or in between two video frames.

In this example, flipper annotation frames are provided synchronously with the video/audio frames to client computer **241***a* so that the annotations, i.e., displayable events, such as HTML pages, can be retrieved and synchronously displayed at client computer **241***a*. Accordingly, URL addresses, for synchronizing HTML page flips with video stream are provided to client computer **241***a* for subsequently retrieval and display of various textual and graphical elements updated at predetermined points corresponding to the timeline of the video stream. Note that HTML pages can be retrieved from either local server **221**, a neighboring local

server, e.g., local server **222**, or other web server(s) (not shown) via network **290**. The HTML pages include localized graphical information accompanying the video stream, such as handouts in a distant learning example.

In the case of ticker annotation frames, a data event type, ticker frames are provided by local server **221** synchronously with the video/audio frames so that the annotations, i.e., displayable ticker data can be synchronized for display at client computer **241***a* at predetermined points corresponding to the timeline of the video stream. Ticker data include localized textual data, such as subtitles of a movie in the local language.

Hence, the customized information delivered to the end user is a combination of global content, e.g., a global video movie, and local content, e.g., local language subtitles. Note that the above description of storing global and/or local information is only exemplary. Information can be distributed and stored in one or more physical locations. For example, global content may be cached at local server **221** or at an intermediate/regional server (not shown) located somewhere between global server **210** and local server **221**. In addition, local database **251** may be a separate structure coupled to local server **221** as shown in FIG. **2**, or local database **251** may be part of local server **221**.

In the example described, the global content and the local content are related, e.g., a global video stream and local subtitles. However, the invention is equally useful for applications where the local content is unrelated to the global content. For example, in a marketing context, the local content may be HTML pages of localized graphical advertisements generated using Java applets and unrelated to the video stream. Such advertisements may be paid for by the sponsors of the video stream. For example, a global video stream of the Superbowl game may be accompanied by advertisements for sporting goods, health drinks or any other product. Depending on the browser, the end user at client computer **241***a* may not have the choice of disabling the advertisements.

Hybrids of the above described embodiment are also possible. In yet another embodiment, global annotation frames are streamed from global server **210**. The global annotation frames include common directory information and file names. In this example, the respective local servers store the corresponding local content under a similar directory structure. As a result, the common directory information and file names can be used by client computers **241***a* , **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*. Upon receipt of the global annotation frames from global server **210**, client computer **241***a* appends the network address of a pre-assigned local server, e.g., local server **221**, and then proceeds with the retrieval of local content from the pre-assigned server.

Besides annotation frames, other schemes for providing localized or customized information are possible. For example, the end user may send a request for marketing information to global server **210**, via, for example, a web browser (note shown) executing on client computer **241***a*. In accordance with a predetermined redirection plan, global server **210** forwards the request to the appropriate local server, e.g., local server **221**. Subsequently, local server **221** provides local marketing content together with global content from global server **210** to client computer **241***a* for display via the web browser. Alternatively, the end user at client computer **241***a* may request marketing information from local server **221** which retrieves global content from global server **210**, and then provides both global and local content to the end user.

Other combinations are also possible. For example, the video stream can be an online news program. Accordingly, global content includes a world news portion and a national news portion streamed to client computers **241***a* , **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*. The accompanying local content, e.g., subtitles for the hearing impaired, can either be global, regional or localized to suit the targeted end users. Local content can also include a local news portion is streamed to a subset of client computers, e.g., client computers **241***a*, **241***b*, . . . **241***z*.

In accordance with another aspect of the invention, a variety of criteria is employed to subdivide client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z*. For example, global server **210** may serve a substantial geographical area, such as Canada, U.S.A., or the Latin American countries. As such, while client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z* from diverse areas, may be interested in the same video stream, client computers may prefer different local content. For example, viewers in Ontario may prefer HTML pages in English while viewers in Quebec may prefer HTML pages in French.

The present invention can be adapted to support a wide range in the total number of end users. Hence, where the marketplace supported by global server **210** is substantially large, it is also possible to divide the marketplace into several levels of servers. For example, in a three-level model, there will be global server(s), regional servers and local servers providing global content, regional content and local content, respectively.

In the marketing context, exemplary criteria for dividing the marketplace includes geography, climate, demography or national boundaries or combinations of thereof. For example, a division by latitude results in northern and southern states. A division by time zones results in the division of eastern and western states. A division by population density, appropriate for products such as lawn mowers, results in the division of big cities such as New York City and urban/rural areas where residents are more likely to have backyards with lawns.

In accordance with another aspect of the invention, as illustrated by the flowchart of FIG. **4**, in addition to receiving global content originating from global server **210** (step **410**), local servers **221**, **222**, . . . **229** retrieve personal information such as personal profiles stored in local databases **251**, **252**, **259** about end users associated with client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z* (step **420**). Alternatively, local databases **251**, **252**, . . . **259** do not store the profiles but include pointers for retrieving the profiles from other databases or web servers (not shown) when the need arises.

From the marketing perspective, personal information such as family income, hobbies and ages, provide usefull indicators of the consumption habits of the end users. For example, an avid outdoorsman is a likely consumer of tents, sleeping bags, freeze dried food, and perhaps hunting rifles. Similarly, a wealthy family is more likely to purchase an expensive European sports sedan. Accordingly, the personal information can be used by local servers **221**, **222**, . . . **229** to generate personalized content which has a high likelihood of generating sale orders from the end users at client computers **241***a*, **241***b*, . . . **241***z*, **242***a*, **242***b*, . . . **242***z*, . . . **249***a*, **249***b*, . . . **249***z* (step **430**). Next, customized information which includes both global content and personalized content is delivered to the end user(s) (step **440**).

FIG. **5** illustrates yet another aspect of the invention in which a cost effective bandwidth is selected for transmitting

scalable multimedia content to the end user which corresponds to the likelihood of patronage. In this example, as in most wide area networks such as the internet, the content provider, e.g., advertiser, is billed for bandwidth used to disseminate the multimedia content. As such, in order to spent the marketing budget wisely, a cost effective scheme for selecting an appropriate bandwidth to deliver content is needed.

Upon receiving an optional end user request for the scalable multimedia content (step **510**), a cost effective bandwidth is selected for transmitting the scalable content to the end user which corresponds to the likelihood of patronage (step **530**). In this example, the scalable content is stored in a server, e.g., local server **221**. Examples of scalable content include a scalable video stream or as a plurality of video streams corresponding different data transmission rates.

Indicators useful for estimating the likelihood of patronage, which indicates a likely return on the marketing investment, include regularity of patronage at the business, customers' income history, credit worthiness, age, hobbies, occupation and marital status (step **520**). For example, if a request for a Rolls Royce came from an end user with an annual income of over a million dollars, the Rolls Royce dealer will likely transmit the sales information in the best resolution possible for the highest available bandwidth. Conversely, if the same request came from a twelve year old automobile buff with a very small expendable allowance, selecting the lowest bandwidth would be appropriate.

Note that other non end user specific factors may also be used to select an appropriate transmission bandwidth. For example, the overall demand/cost for the bandwidth at the time of the request or the time of day may be factors. Thus, end user indicators and non end user factors are used to select a cost effective bandwidth which is then used to deliver multimedia content to the end user (step **540**). Although the above described example is based on a "pull" model, i.e., the multimedia content is delivered to the end user upon a request, the invention is equally applicable to unsolicited multimedia content.

Hence, in yet another embodiment, although more intrusive from the end user perspective, a "push" model of providing unsolicited localized marketing content may also be implemented. For example, instead of client computer **241***a* fetching an HTML page, an area of the web browser (or equivalent) executing on client computer **241***a* may be reserved for displaying localized marketing content that the end user does not have control over. Generally, if the global content is interesting enough, most end users have a level of tolerance for unsolicited marketing information. Commercial television have exploited this tolerance by inserting paid short commercials within popular television programs.

The different aspects of the present invention described above may be practiced with network performance improvement techniques such as multi-castiff and/or recasting. For example, pending U.S. patent application, Ser. No. 08/865,788, filed May 30, 1997, entitled "Method and Apparatus for Distributed Transmission of Real Time Multimedia Information", by Navin Chaddha et al, discloses a recasting server which pushes multiple bandwidth points and indexes in parallel with secondary servers, capable of dynamically switching bandwidth during transmission.

While this invention has been described in terms of several preferred embodiments, there are alterations, permutations, and equivalents which fall within the scope of this invention. For example, instead of distributing the regional/local content among regional/local servers, it is also possible to store regional/local content at the global server, to be selectively delivered to the appropriate end user(s). It is therefore intended that the following appended claims be interpreted as including all such alterations, permutations, and equivalents as fall within the true spirit and scope of the present invention.

What is claimed is:

1. In a server having a processor and memory, a method for delivering scalable multimedia content to be displayed on a display device of a client computer for an end user, the server and the client computer coupled to a computer network, the method comprising:

computing a probability of consummating a sale by said end user using at least one indicator associated with said end user which is stored in a database coupled to said server;

selecting a cost effective bandwidth from a plurality of bandwidths for the scalable multimedia content corresponding to the probability of consummating a sale; and

delivering the multimedia content to the end user using the selected cost effective bandwidth.

2. The method of claim **1** further comprising receiving a request for the multimedia content from said end user.

3. The method of claim **1** wherein the multimedia content includes a video stream.

4. The method of claim **1** wherein computing the probability of consummating a sale uses at least one of a plurality of indicators such as past patronage, income, credit worthiness, age, hobbies, occupation and marital status.

5. The method of claim **4** wherein selecting the cost effective bandwidth also uses non end user factors such as demand for the bandwidth or the time of day.

6. A server having a processor and memory, the server configured to:

compute a probability of consummating a sale by an end user using at least one indicator associated with said end user which is stored in a database coupled to the server;

select a cost effective bandwidth for multimedia content from a plurality of bandwidths, wherein the cost effective bandwidth corresponds to the probability of consummating a sale; and

deliver the multimedia content to the end user using the selected cost effective bandwidth.

7. The server of claim **6** further configured to receive a request for the multimedia content from said end user.

8. The server of claim **6** wherein the multimedia content includes a video stream.

9. The server of claim **6** wherein the probability of consummating a sale is computed using at least one of a plurality of indicators such as past patronage, income, credit worthiness, age, hobbies, occupation and marital status.

10. The server of claim **9** wherein the cost effective bandwidth is selected using non end user factors such as demand for the bandwidth or the time of day.

11. In a client computer having a processor, memory and a display device, a method of providing scalable multimedia content to an end user from a server, the server and the client computer coupled to a computer network, the method comprising:

receiving multimedia content from the server, the multimedia content delivered at a cost effective bandwidth selected from a plurality of bandwidths, the cost effective bandwidth corresponds to a probability of consum-

mating a sale by the end user, the probability of consummating a sale by said end user computed using at least one indicator associated with said end user which is stored in a database coupled to said server; and

displaying the multimedia content on said display device.

12. The method of claim **11** further comprising sending a request for the multimedia content to said server.

13. The method of claim **11** wherein the multimedia content includes a video stream.

14. The method of claim **11** wherein the probability of consummating a sale is computed using at least one of a plurality of indicators such as past patronage, income, credit worthiness, age, hobbies, occupation and marital status.

15. The method of claim **14** wherein the cost effective bandwidth is computed using non end user factors such as demand for the bandwidth or the time of day.

16. A client computer having a processor, memory and a display device, the client computer configured to:

receive multimedia content from a server, the server and the client computer coupled a computer network, the multimedia content delivered at a cost effective bandwidth selected from a plurality of bandwidths based on a probability of consummating a sale by the end user, the probability of consummating a sale by said end user computed using at least one indicator associated with said end user which is stored in a database coupled to said server; and

display the multimedia content on said display device.

17. The client computer of claim **16** further configured to send a request for the multimedia content to said server.

18. The client computer of claim **16** wherein the multimedia content includes a video stream.

19. The client computer of claim **16** wherein the probability of consummating a sale is computed using at least one of a plurality of indicators such as past patronage, income, credit worthiness, age, hobbies, occupation and marital status.

20. The client computer of claim **16** wherein the cost effective bandwidth is computed using non end user factors such as demand for the bandwidth or the time of day.

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